

independent Claims 13 and 14 each define an invention, which when considered as a whole, is neither anticipated by, nor obvious over, the applied references.

As previously noted, an important feature of the present invention is the use of a diffusive reflector. The light from each pumping light source around an amplifying medium is distributed by the reflector. (Specification at 8.) The diffusive reflector advantageously illuminates the amplifying medium in all directions, which promotes homogeneous optical pumping. (*Id.*) As a result, there are less symmetry constraints with respect to the positioning and sorting of the light sources, and additionally, the shape of the reflector can take various configurations. (*Id.*)

The Dube reference discloses a laser pump cavity in which the light stemming from a light source 91 undergoes several reflections on a reflective wall 44 surrounding the amplifying medium 15. As a result, the light goes through the amplifying medium several times as it is pumped. The Dube reference explicitly states that the outer cylindrical surfaces 34 and 44 of the transparent pump cavity sleeves 31 and 41 are specular and/or highly reflective to pump the light to define the reflective surface of the pump cavity. (Dube at col. 8, lines 39-44.) Claims 13 and 14, on the other hand, each define a diffusive reflector. A diffusive reflector is not specular and is not highly reflective. As noted in the outstanding office action, Dube does not disclose a diffusive reflector. (Office Action at 2.) Thus, Dube is not believed to anticipate or make obvious the invention of Claim 13 or Claim 14.

The outstanding office action relies upon the Chang reference to disclose a diffusive reflector and alleges that it would be obvious to modify Dube in view of Chang in order to obtain applicant's claimed invention. In order to establish a *prima facie* case of obviousness, however, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one having ordinary skill in art, to modify the reference or to combine reference teachings. *In re Royka*, 490 F.2d 981, 180 USPQ 580

(CCPA 1974). There is absolutely no motivation in either the applied references or in the knowledge generally available to one having ordinary skill in the art to modify Dube to include a diffusive reflector in the manner defined by Claims 13 and 14.

The Dube reference discloses what is known as a specular reflection type laser reflector, as described in applicant's Request for Reconsideration filed February 23, 2004. The transparent pump cavity sleeves 31 and 41 of Dube are especially shaped so that light will reflect off of the surfaces 34 and 44 to cause the pump light to reach all portions of the rod section evenly. (Dube at col. 3, lines 11-13 and 35-38; col. 4, lines 28-31.) In fact, Dube states the following: "Because the centers of the two circular cylinder reflecting surfaces 34 and 44 are not coincident, rays of pump light will, after each reflection, follow a different path through or around the laser material 15. This scrambling of the pump light paths helps to insure uniform and symmetric deposition of the pump light energy in the laser material." (*Id.* at col. 7, lines 31-35.) One of ordinary skill in art would never be motivated to change the reflecting surfaces 34 and 44 of Dube to a diffusive material because the goal of Dube, namely "to insure uniform and symmetric deposition of the pump light energy in the laser material," would be frustrated.

Looking at Figure 1 of Dube, for example, if the highly reflective surface 44 were changed to a diffusive material, the light emitted from the light source 91 would strike the diffusive material and be defused so that almost all of the light would concentrate on the lower left-hand portion of the light amplifying medium 15. This, of course, is contrary to the explicit teachings of Dube. Dube intends for the light to be directed by the reflective (not diffusive) surfaces of the sleeves 31 and 41, as shown by the light path in Figure 1 of Dube. A diffusive surface would render the structure of Dube superfluous because the same result of concentrating the light in the lower left-hand corner could be obtained by simply impinging the light amplifying medium 15 directly with the light source 91.

Likewise, the Chang reference attempts to achieve pumping homogeneity by directly lighting the laser rod 34 with multiple light sources. (Chang at Fig. 2; col. 2, lines 7-10.) Accordingly, it can be appreciated that one of ordinary skill in the art would not be motivated to modify an indirect laser reflector (e.g., Dube) that uses specular reflection in view of a direct laser reflector (e.g., Chang) that uses diffusive reflectors. There is simply no motivation anywhere in the prior art to provide the device of Dube with a diffusive reflector. Consequently, the combination of references suggested by the outstanding office action is completely untenable and has no basis under the legal standard of obviousness.

Therefore, applicant submits that Claims 13 and 14 patentably distinguish over the applied references. Since Claims 15-32 depend from Claim 13 or Claim 14, applicant also submits that Claims 15-32 patentably distinguish over the applied references for at least the same reasons as Claims 13 and 14.

In view of the foregoing discussion, no further issues are believed to be outstanding in the present application. Therefore, applicant respectfully requests that the present application be allowed and be passed to issue.

Respectfully submitted,

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